

CLAIMS

1. A radio communication management method in a
radio communication system which manages link connection of
5 a mobile terminal using HMIPv6,

wherein the mobile terminal transmits information
on authentication for accessing a desired network together
with information for changing the link connection with
respect to a server which manages the link connection of
10 the mobile terminal to reduce a time required for changing
the link connection of the mobile terminal.

2. The radio communication management method
according to claim 1, wherein the mobile terminal transmits
15 the information for changing the link connection and the
information on the authentication as one piece of
information, and the server which manages the link
connection acquires each of the information for changing
the link connection and the information on the
20 authentication from the one piece of information.

3. The radio communication management method
according to claim 1, wherein the server which manages the
link connection acquires an authentication result by an
25 authentication process using the information on the

authentication.

4. The radio communication management method
according to claim 3, wherein the server which manages the
5 link connection communicates with an authentication server
which authenticates the mobile terminal to acquire the
authentication result.

5. The radio communication management method
10 according to claim 3, comprising the steps of: transmitting
information notifying that the change of the link
connection of the mobile terminal has been confirmed and
the authentication result as one piece of information to
the mobile terminal.

15

6. The radio communication management method
according to claim 3, wherein the server which manages the
link connection transmits information notifying that the
change of the link connection of the mobile terminal has
20 been confirmed to the mobile terminal, and thereafter
transmits the authentication result to the mobile terminal
in a case where the authentication result is capable of
being acquired.

25

7. The radio communication management method

according to claim 6, wherein the server which manages the link connection sets a time until acquiring the authentication result, and transmits the authentication result to the mobile terminal together with information notifying that the change of the link connection of the mobile terminal has been confirmed, when next receiving the information for changing the link connection from the mobile terminal in a case where the authentication result is capable of being acquired within the time until acquiring the authentication result.

8. The radio communication management method according to claim 7, wherein the server which manages the link connection sets a predetermined tentative permission time for which the mobile terminal tentatively permits an access to the desired network, and transmits, to the mobile terminal, information notifying the permission of the access to the desired network only for the predetermined time together with the information notifying that the change of the link connection of the mobile terminal has been confirmed.

9. The radio communication management method according to claim 8, wherein the server which manages the link connection sets a predetermined permission time which

is longer than the predetermined tentative permission time and for which the mobile terminal permits the access to the desired network, and transmits, to the mobile terminal, the information notifying the permission of the access to the
5 desired network only for the predetermined permission time together with the information notifying that the change of the link connection of the mobile terminal has been confirmed in a case where the authentication result indicates authentication success.

10

10. The radio communication management method according to claim 8, wherein the server which manages the link connection performs registration relating to the change of the link connection of the mobile terminal which
15 has permitted the access to the desired network for the predetermined tentative permission time or only for the predetermined permission time, and deletes the registration relating to the change of the link connection of the mobile terminal in a case where the predetermined tentative
20 permission time or the predetermined permission time has elapsed.

11. The radio communication management method according to claim 3, wherein the server which manages the
25 link connection sets a time until acquiring the

authentication result, and judges the authentication result as authentication failure in a case where the authentication result is not capable of being acquired within the time until acquiring the authentication result.

5

12. The radio communication management method according to claim 5 or 6, wherein the server which manages the link connection sets a predetermined connection prohibition time with respect to the mobile terminal, and
10 does not perform a process relating to the change of the link connection of the mobile terminal which has failed in the authentication and a process relating to the authentication for the predetermined connection prohibition time after notification of authentication failure in a case
15 where the authentication failure is notified as the authentication result with respect to the mobile terminal.

13. The radio communication management method according to claim 5 or 6, wherein the server which manages
20 the link connection performs registration relating to the change of the link connection of the mobile terminal which has succeeded in the authentication only in a case where authentication success is notified as the authentication result with respect to the mobile terminal.

25

14. A radio communication management method in a radio communication system which manages link connection of a mobile terminal,

5 wherein the mobile terminal transmits information on authentication for accessing a desired network together with information for changing the link connection with respect to a server which manages the link connection of the mobile terminal, and

10 the server which manages the link connection sets a time until acquiring an authentication result by an authentication process using the information on the authentication, and transmits the authentication result to the mobile terminal in a case where the authentication result is capable of being acquired within the time until
15 acquiring the authentication result.

15. The radio communication management method according to claim 14, wherein the server which manages the link connection sets a predetermined tentative permission
20 time for which the mobile terminal tentatively permits an access to the desired network, and transmits, to the mobile terminal, information notifying the permission of the access to the desired network only for the predetermined time.

16. The radio communication management method according to claim 15, wherein the server which manages the link connection sets a predetermined permission time which is longer than the predetermined tentative permission time and for which the mobile terminal permits the access to the desired network, and transmits, to the mobile terminal, the information notifying the permission of the access to the desired network only for the predetermined permission time in a case where the authentication result indicates authentication success.

17. The radio communication management method according to claim 15 or 16, wherein the server which manages the link connection cuts the connection of the mobile terminal in a case where the predetermined tentative permission time or the predetermined permission time has elapsed.

18. A radio communication management method in a radio communication system which manages link connection of a mobile terminal,

wherein the mobile terminal transmits information on authentication for accessing a desired network together with information for changing the link connection with respect to a server which manages the link connection of

the mobile terminal, and

the server which manages the link connection sets a time until acquiring an authentication result by an authentication process using the information on the authentication, and judges the authentication result as authentication failure in a case where the authentication result is not capable of being acquired within the time until acquiring the authentication result.

10 19. The radio communication management method according to claim 14 or 18, wherein the server which manages the link connection sets a predetermined connection prohibition time with respect to the mobile terminal, and does not perform a process relating to the mobile terminal which has failed in the authentication only for the predetermined connection prohibition time after notification of the authentication failure in a case where the authentication failure is notified as the authentication result with respect to the mobile terminal.

20

 20. The radio communication management method according to claim 14, wherein the server which manages the link connection performs registration relating to the change of the link connection of the mobile terminal which has succeeded in the authentication only in a case where

25

authentication success is notified as the authentication result with respect to the mobile terminal.

21. A radio communication management server which
5 manages link connection of a mobile terminal using HMIPv6,
constituted to receive, from the mobile terminal,
information for changing the link connection and
information on authentication for accessing a desired
network as one piece of information, and acquire each of
10 the information for changing the link connection and the
information on the authentication from the one piece of
information.

22. The radio communication management server
15 according to claim 21, constituted to acquire an
authentication result by an authentication process using
the information on the authentication.

23. The radio communication management server
20 according to claim 22, comprising:

means for communicating with an authentication
server which authenticates the mobile terminal in such a
manner as to acquire the authentication result.

25 24. The radio communication management server

according to claim 22, constituted to transmit, to the
mobile terminal, information notifying that the change of
the link connection of the mobile terminal has been
confirmed and the authentication result as one piece of
5 information.

25. The radio communication management server
according to claim 22, constituted to transmit information
notifying that the change of the link connection of the
10 mobile terminal has been confirmed to the mobile terminal,
and thereafter transmit the authentication result to the
mobile terminal in a case where the authentication result
is capable of being acquired.

15 26. The radio communication management server
according to claim 25, further comprising: time setting
means for setting a time until acquiring the authentication
result in such a manner as to transmit the authentication
result to the mobile terminal together with information
20 notifying that the change of the link connection of the
mobile terminal has been confirmed, when next receiving the
information for changing the link connection from the
mobile terminal in a case where the authentication result
is capable of being acquired within the time until
25 acquiring the authentication result.

27. The radio communication management server according to claim 26, further comprising:

time setting means for setting a predetermined
5 tentative permission time to tentatively permit an access
to the desired network with respect to the mobile terminal
in such a manner as to transmit, to the mobile terminal,
information notifying the permission of the access to the
desired network only for the predetermined time together
10 with information notifying that the change of the link
connection of the mobile terminal has been confirmed.

28. The radio communication management server according to claim 27, further comprising:

15 time setting means for setting, with respect to
the mobile terminal, a predetermined permission time which
is longer than the predetermined tentative permission time
and for which the mobile terminal permits the access to the
desired network in such a manner as to transmit, to the
20 mobile terminal, the information notifying the permission
of the access to the desired network only for the
predetermined time together with the information notifying
that the change of the link connection of the mobile
terminal has been confirmed in a case where the
25 authentication result indicates authentication success.

Rephrased Ad 19
54

29. The radio communication management server according to claim 27, further comprising:

information registration means for performing
5 registration relating to the change of the link connection of the mobile terminal which has permitted the access to the desired network for the predetermined tentative permission time or only for the predetermined permission time; and

10 information deletion means for deleting the registration relating to the change of the link connection of the mobile terminal in a case where the predetermined tentative permission time or the predetermined permission time has elapsed.

15

30. The radio communication management server according to claim 22, further comprising:

time setting means for setting a time until acquiring the authentication result; and

20 judgment means for judging the authentication result as authentication failure in a case where the authentication result is not capable of being acquired within the time until acquiring the authentication result.

25

31. The radio communication management server

according to claim 24 or 25, further comprising:

time setting means for setting a predetermined connection prohibition time with respect to the mobile terminal; and

5 control means for executing a control to prevent a process relating to the change of the link connection of the mobile terminal which has failed in the authentication and a process relating to the authentication from being performed for the predetermined connection prohibition time
10 after notification of authentication failure in a case where the authentication failure is notified as the authentication result with respect to the mobile terminal.

32. The radio communication management server
15 according to claim 24 or 25, further comprising:

control means for executing a control to perform registration relating to the change of the link connection of the mobile terminal which has succeeded in the authentication only in a case where authentication success
20 is notified as the authentication result with respect to the mobile terminal.

33. A radio communication management server which manages link connection of a mobile terminal, comprising:

25 receiving means for receiving, from the mobile

terminal, information on authentication for accessing a desired network together with information for changing the link connection;

time setting means for setting a time until
5 acquiring an authentication result by an authentication process using the information on the authentication; and
transmitting means for transmitting the authentication result to the mobile terminal in a case where the authentication result is capable of being
10 acquired within the time until acquiring the authentication result.

34. The radio communication management server according to claim 33, further comprising:

15 time setting means for setting a predetermined tentative permission time for which the mobile terminal tentatively permits an access to the desired network in such a manner as to transmit, to the mobile terminal, information notifying the permission of the access to the
20 desired network only for the predetermined time.

35. The radio communication management server according to claim 34, further comprising:

time setting means for setting a predetermined
25 permission time which is longer than the predetermined

tentative permission time and for which the mobile terminal permits the access to the desired network in such a manner as to transmit, to the mobile terminal, the information notifying the permission of the access to the desired
5 network only for the predetermined time in a case where the authentication result indicates authentication success.

36. The radio communication management server according to claim 34 or 35, further comprising: control
10 means for cutting the connection of the mobile terminal in a case where the predetermined tentative permission time or the predetermined permission time has elapsed.

37. A radio communication management server in a
15 radio communication system which manages link connection of a mobile terminal, comprising:

receiving means for receiving, from the mobile terminal, information on authentication for accessing a desired network together with information for changing the
20 link connection;

time setting means for setting a time until acquiring an authentication result by an authentication process using the information on the authentication by the server which manages the link connection; and

25 transmitting means for judging the authentication

result as authentication failure, and transmitting the authentication result to the mobile terminal in a case where the authentication result is not capable of being acquired within the time until acquiring the authentication
5 result.

38. The radio communication management server according to claim 33 or 37, further comprising:

time setting means for setting a predetermined
10 connection prohibition time with respect to the mobile terminal; and

control means for executing a control to prevent a process relating to the mobile terminal which has failed in the authentication from being performed only for the
15 predetermined connection prohibition time after notification of authentication failure in a case where the authentication failure is notified as the authentication result with respect to the mobile terminal.

20 39. The radio communication management server according to claim 33, further comprising:

control means for executing a control to perform registration relating to the change of the link connection of the mobile terminal which has succeeded in the
25 authentication only in a case where authentication success

- 76 -

is notified as the authentication result with respect to the mobile terminal.